WHAT IS CLAIMED IS:

1. A method for forming a thin film field effect transistor comprising:

forming a preliminary substrate having at least a glass substrate layer and a buffer layer;

forming source and drain metal regions of the transistor in predetermined locations on the buffer layer, the source and drain metal regions defining an opening;

forming a silicon layer, a gate oxide layer, and gate metal layer within the opening;

forming a first photoresist pattern on the gate metal layer having a two-portion structure with a first portion and a second portion underneath the first portion;

selectively removing portions of the gate metal, gate oxide, and silicon layers using the first photoresist pattern;

selectively reducing the first photoresist pattern to form a second photoresist pattern with a coverage area smaller than that of the first photoresist pattern;

reducing the gate metal layer using the second photoresist pattern;

removing the second photoresist pattern; and

doping a predetermined impurity in the silicon layer for forming a source region and a drain region of a predetermined type.

2. The method of claim 1 further comprising forming an interlayer dielectric layer covering the transistor with the source and drain metal regions, and the source and drain regions exposed.

3. The method of claim 2 further comprising forming a conducting layer making connection with the exposed source and drain regions and the source and drain metal regions.

4. The method of claim 3 further comprising selectively removing portions of the conducting layer for additional circuit routing.

5. The method of claim 1 wherein the forming the first photoresist layer further includes selectively exposing a photoresist material to a light source by using a predetermined mask with a first and second regions, the first region passing less light than the second region for forming the two-portion structure.

6. The method of claim 5 wherein the first and second regions of the mask are made of different materials.

7. The method of claim 1 wherein the conducting layer is indium tin oxide.

8. A method for forming a thin film field effect transistor comprising:

using a first mask process for forming source and drain metal regions of the transistor in predetermined locations on a buffer layer situated on top of a glass substrate layer and for forming a silicon layer, a gate oxide layer, and gate metal layer within an opening defined by the source and drain metal regions;

using a second mask process for forming a first photoresist pattern having a two-portion structure on top of the gate metal layer for selectively removing

portions of the gate metal, gate oxide, and silicon layers;

selectively reducing the first photoresist pattern to form a second photoresist pattern with a coverage area smaller than that of the first photoresist pattern for reducing the gate metal layer;

using a third mask process for forming an interlayer dielectric layer covering the transistor with the source and drain metal regions, and the source and drain regions exposed;

forming a conducting layer making connection with the exposed source and drain regions and the source and drain metal regions; and

using a fourth mask process for selectively removing predetermined portions of the conducting layer for additional circuit routing.

9. The method of claim 8 further comprising removing the second photoresist pattern and doping a predetermined impurity in the silicon layer for forming a source region and a drain region of a predetermined type before the third mask process.

10. The method of claim 8 wherein the using the second mask process further includes using a predetermined mask in a single exposure process to form the first photoresist pattern with a first portion and a second portion underneath the first portion.

11. The method of claim 10 wherein the predetermined mask has a center and surrounding regions, the center region passing less light than the surrounding region for forming the two-portion structure.

12. The method of claim 11 wherein the center and surrounding regions of the mask are made of different materials with the material for the center region shielding more light than the material for the surrounding region.

13. The method of claim 11 wherein the first and second regions of the mask are made from a same material with a predetermined mask pattern on the surrounding region for hindering the light from passing therethrough.

14. A method for forming a thin film field effect transistor comprising:

forming a preliminary substrate having at least a glass substrate layer and a buffer layer;

forming source and drain metal regions of the transistor in predetermined locations on the buffer layer, the source and drain metal regions defining an opening;

forming a poly-silicon layer, a gate oxide layer, and gate metal layer sequentially within the opening;

forming a first photoresist pattern on the gate metal layer having a two-portion structure with a first portion and a second portion underneath the first portion and bigger than the first portion;

selectively removing portions of the gate metal, gate oxide, and silicon layers using the first photoresist pattern;

selectively reducing the first photoresist pattern to form a second photoresist pattern with a same coverage area as that of the first photoresist pattern;

reducing the gate metal layer using the second photoresist pattern;

removing the second photoresist pattern; and

doping a predetermined impurity in the poly-silicon layer for forming a source region and a drain region of a predetermined type.

15. The method of claim 14 further comprising forming an interlayer dielectric layer covering the transistor with the source and drain metal regions, and the source and drain regions exposed.

16. The method of claim 15 further comprising forming a conducting layer making connection with the exposed source and drain regions and the source and drain metal regions.

17. The method of claim 16 wherein the conducting layer is indium tin oxide.

18. The method of claim 16 further comprising selectively removing portions of the conducting layer for additional circuit routing.

19. The method of claim 14 wherein the forming the first photoresist layer further includes selectively exposing a photoresist material to a light source by using a predetermined mask with a first and second regions, the first region passing less light than the second region for forming the two-portion structure.

20. The method of claim 19 wherein the first and second regions of the mask are made of different materials.